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CUTWORMS AND THEIR CONTROL IN CORN & OTHER CEREAL CROPS

CUTWORMS cause serious losses to corn and other cereal crops every year in some part of the United States. These worms are the young of brown or gray moths, or "millers," which lay their eggs on grasses and grains. The young cutworms live in the soil during the winter and attack the grain soon after it sprouts in the spring. Fall plowing is a beneficial measure for control, where practicable. Poisoning cutworms with the poisoned baits described on pages 5 to 6 is the best general remedial measure for cutworm injury.

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CUTWORMS AND THEIR CONTROL IN CORN AND OTHER CEREAL CROPS.

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IMPORTANCE AND NATURE OF CUTWORM INJURY.

PROMPT ACTION is necessary to control cutworms after their presence has become noticeable in the spring. When the corn or other cereal has begun to sprout, which is the time the worms usually begin their depredations, delay in applying remedies may prove disastrous to the crop. It is usually too late then to write to the Department of Agriculture for advice on control measures, and await a reply. The importance of recognizing these insects and knowing how to control them is evident.

Cutworm injury is almost invariably done in the spring, the plants usually being cut off at the surface, or a little below the surface, of the ground. This injury begins as soon as the first plants sprout and continues until late June or early July, when the worms have become full grown. They feed at night, resting during the day beneath débris or in the soil, one-half to 1 inch below the surface, and since they usually closely resemble the color of the soil, the cause of the injury is often not apparent. If the soil surrounding the cut-off plant is examined carefully, however, the culprit will quite likely be found in the soil curled up as illustrated in Figure 1, *c*.

LIFE HISTORY OF CUTWORMS.

The various cutworms are known by a number of popular names, such as the glassy cutworm,[1] black cutworm,[2] variegated cutworm[3] (fig. 1), spotted cutworm[4] (fig. 2), etc., but the injuries they cause are very similar and their habits in general are also much the same. The parents of cutworms are grayish or brownish moths, or "millers," commonly found around lights during summer eve-

[1] *Sidemia devastator* Brace.
[2] *Agrotis ypsilon* Rott.
[3] *Lycophotia margaritosa saucia* Hbn.
[4] *Agrotis c-nigrum* L.

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nings. Each moth may lay from 200 to 500 eggs, either in masses or singly, in fields covered with dense vegetation, and hence cutworms are found most often in cultivated fields that have been in grass or weeds the preceding fall. The eggs hatch in the fall, a few weeks after they are laid, usuallly during September, and the young cutworms after feeding on grass and other vegetation until cold weather, pass the winter as partly grown caterpillars. If such infested fields are left to grass, no noticeable injury is likely to occur, but when it is broken up and planted to corn or other wide-row crops, the worms, being suddenly placed on "short rations," often severely injure the newly planted crops, the nearly full-grown worms feeding greedily and consuming large quanties of food. In northern latitudes they attain full growth and stop feeding in late June or early July, and change to the pupal or resting stage. The injury often ceases so suddenly that farmers are at a loss to account for the fact.

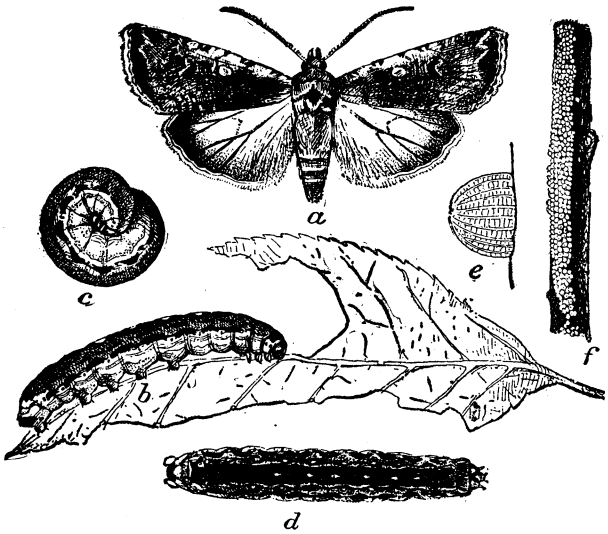

FIG. 1.—Variegated cutworm (*Lycophotia margaritosa saucia*): *a*, Moth; *b*, normal form of caterpillar, side view; *c*, same in curved position; *d*, dark form, view of back; *e*, greatly enlarged egg, seen from side; *f*, egg mass on twig. (Howard.)

In the western and northwestern States a distinct group of cutworms occurs, the individual members of which have been studied but slightly. Such studies have shown that some of them at least have life histories quite different from those of the cutworms of the eastern or more humid regions of the United States, as outlined above. These western cutworms have been known under the names of the "army cutworms" or the "western army cutworm."

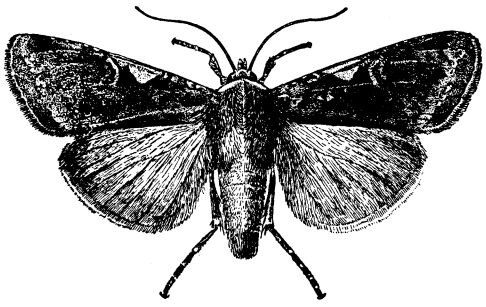

FIG. 2.—Adult, or moth, of the spotted cutworm.

CONTROL OF CUTWORMS.

CULTURAL METHODS.

Land to be planted to corn the following spring, especially such land as has lain in grass for a considerable time and is likely to contain cutworms, should be plowed in midsummer or early fall about the time the eggs are laid, or better, before the eggs are laid, for then vegetation which is suitable for the moths to lay their eggs upon is removed. The earlier the preceding year grasslands to be planted to corn are plowed, the less will be the probability that the cutworm moths will have laid their eggs thereon and the less, consequently, will be the danger of injury by cutworms the following year.

Late fall and winter plowing of grasslands, although not as effective as early plowing, will destroy many of the hibernating cutworms, as well as such other important corn pests as white grubs, and should be practiced when earlier plowing is impracticable.

Unfortunately these measures are not applicable in the case of the pale western cutworm,[5] a species of almost exclusively subterranean habits which recently has become widely injurious in Montana, North Dakota, and the prairie Provinces of Canada. No thoroughly satisfactory method of control has as yet been developed for this pest.

USE OF HOGS AND POULTRY.

Pasturing hogs upon land supposed to harbor cutworms is a beneficial practice, as these animals root up and devour insects of many kinds, including cutworms, in large numbers. Farm poultry, if trained to follow the plow, will prove of inestimable value.

POISONED BAITS.

When cutworms are found to be abundant on corn land, the use of a poisoned bait is recommended. This may be prepared as follows:

Wheat bran	pounds	50
Paris green or crude arsenic	do	2
Blackstrap molasses	quarts	2
Water	gallon	1,
		or more as needed.

Mix thoroughly together in a dry state the poison and the bran, then add the diluted molasses and stir vigorously until thoroughly mixed.

Distribute this bait over the infested field broadcast, taking care to sprinkle it sparingly around each hill. In case bran can not be readily obtained, middlings or alfalfa meal may be successfully substituted.

Where bran and other fillers for poisoned baits are prohibitively expensive or difficult to obtain in sufficient quantities, they may be

[5] *Porosagrotis orthogonia* Morr.

diluted with equal parts of fresh hardwood sawdust. The formula for poisoned bait prepared in this manner is as follows:

Paris green or white arsenic	pounds	2
Fresh hardwood sawdust	do	25
Wheat bran	do	25
Molasses	quarts	2
Water	do	4 to 8, or more as needed.

This mixture is not quite so efficient as the poisoned bait containing the entire amount of bran, but it has shown good results and may be used to advantage when necessary. Pine sawdust should not be used, as this seems to repel the insects.

Where only a small quantity of poisoned bait is required, the following formula will be found most convenient:

White arsenic or Paris green	pound	¼
Dry bran	peck	1
Molasses	pint	1
Water	quarts	2 to 4, or more as needed.

It is often advantageous to allow the mash thus obtained to stand for several hours before using it, as this seems to result in greater effectiveness.

In fields known to be infested, the distribution of this bait should be started as soon as the corn begins to appear above ground so that the cutworm may be eliminated as quickly as possible and the injured hills promptly replanted. During the warmer spring months cutworms do most of their feeding at night and burrow into the soil to the depth of an inch or two during the day, so that the bait will usually be more effective if applied during the late afternoon or early evening hours.

WARNING.—Remember that Paris green and white arsenic are violent poisons. Take care that children, other persons, and livestock of all kinds are prevented from gaining access to the poison on receptacles containing poisoned bait or used in mixing it. The safest way to dispose of any surplus bait is to broadcast it thinly on the ground in a field.

In mixing and handling arsenical baits the poison may burn the hands or cause soreness under the fingernails. To prevent this it is recommended that the hands be greased (previous to handling bait) with petrolatum or cup grease, worked well under and around the fingernails.

PROTECTIVE BARRIERS AND TRAPPING.

Frequently cutworms migrate to cultivated fields from adjoining grasslands, and in such cases the crops can be protected by running a narrow band of the poisoned bait around the edge of the field

or along the side nearest the source of infestation. This form of infestation most frequently occurs in the semiarid States of the West and Northwest. Where cutworms occur in hordes moving together in one direction, they may be trapped by the following method, which often is used in army-worm control: A furrow or ditch (fig. 3) is plowed or dug completely around the infested area. In attempting to cross such ditches the worms fall into them and can easily be destroyed by crushing them with a log dragged back and forth through the ditch or furrow. If shallow post holes are sunk in the bottom of the ditch at intervals of about 20 feet, the worms will crawl along the ditch bottoms and fall into the holes, where they may be destroyed by crushing or other means. If the subsoil be

FIG. 3.—Ditch prepared to entrap marching cutworms. A log dragged back and forth through the ditch crushes the worms which have fallen into it.

of such a nature that water penetrates it but slowly, the post holes may be partially filled with water, on the top of which a layer of coal oil or petroleum may be poured. Upon falling into such holes the worms are almost immediately destroyed without further action on the part of the farmer.

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